SASR
Strategic Airport Security Rollout

LOCKHEED MARTIN

Staff and Lane Modeling Methodology for TSA Checkpoint Passenger Screening

M. P. Timothy Bradley

Lockheed Martin

Jay Goyal

Transportation Security Administration

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TRANSPORTATION SECURITY ADMINISTRATION · U.S. DEPARTMENT OF TRANSPORTATION

Objective

- **Provide World-Class Checkpoint Security**
  - Determine the appropriate number of checkpoint lanes required to handle airport passenger volume efficiently.
  - Identify checkpoints that have immediate demand for new lanes and allocate funds on a priority basis.
- **Provide World-Class Customer Service**
  - Identify staffing requirements to operate checkpoint lanes that meet TSA passenger wait time standard (no Pax waits more than 10 min prior to walking through WTMD)

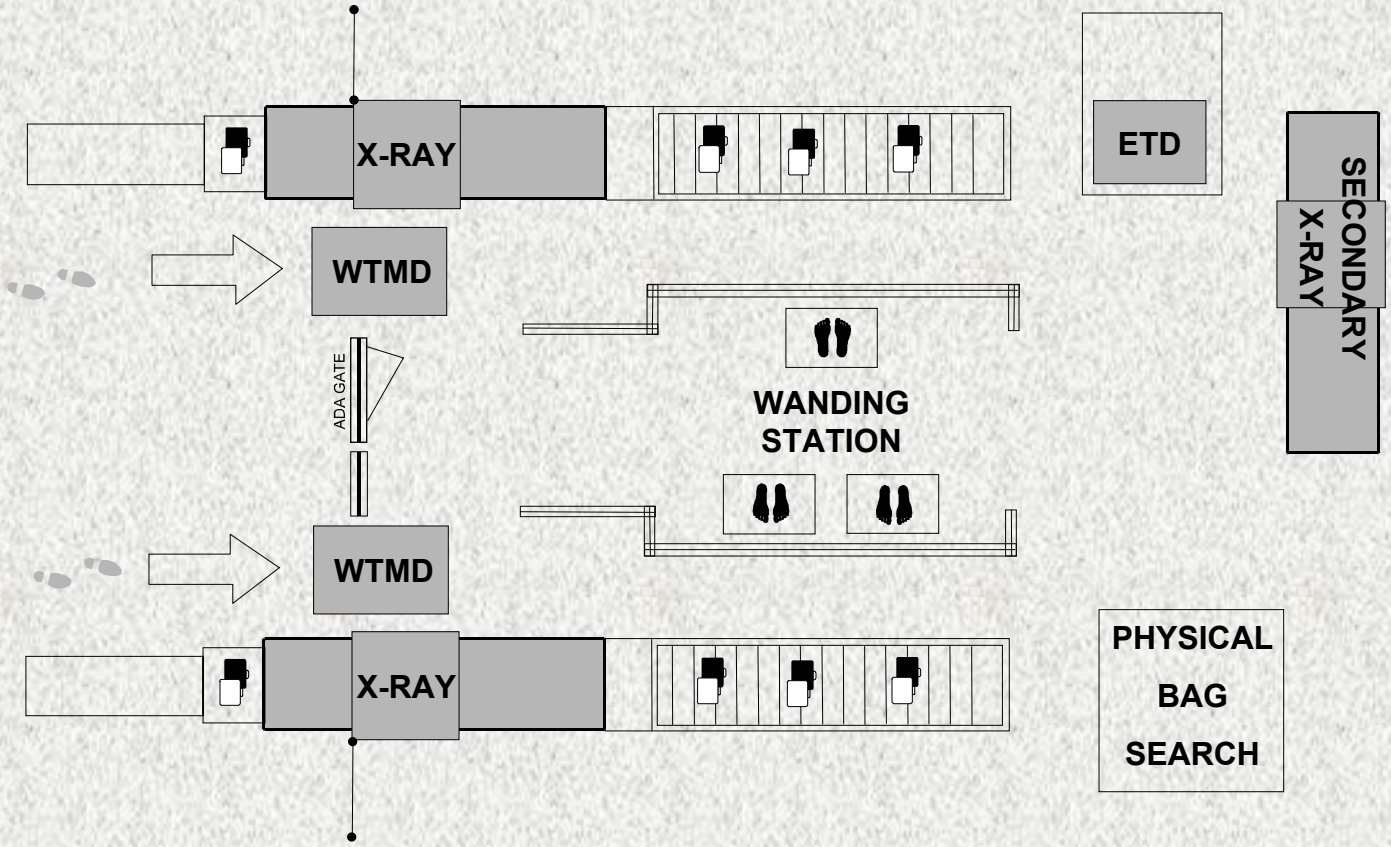
Airport Data Collection

- **Number of lanes per checkpoint(s) for each sterile area within every airport:**
  - Original baseline for all commercial airports from FAA/TSA database.
  - Crosscheck and validation performed by Lockheed Martin on-site teams in July and August 2002.
  - Takes into account multiple checkpoints serving same gates.
- **Airline Data: Number of passengers boarding.**
- **Passenger throughput:**
  - Determined prior to TSA process improvements.
- **For each checkpoint:**
  - Identification of the peak period of passenger flow;
  - Determination of maximum wait time over peak 2 h; and
  - Determination of throughput per lane.

Analysis of Data

- **Vast majority of checkpoints were meeting delay time criteria even at peak periods.**
- **Airline data of passengers loading can be misleading owing to transfers:**
  - Hub airports board more passengers due to flight to flight transfers than entry through checkpoints.
- **Some very large differences in throughput per lane were apparent.**
  - Operation of X-ray.
  - Amount of carry-through the WTMD (e.g., coats).

Screening Process



- **Screening tradeoffs with TSA process**
  - "Continuous" belt movement versus "jogging"
  - Amount of forced secondary screening

Provision of Checkpoint Lanes

- **Throughput capacity normalized based upon equipment used per the TSA approved process.**
- **No lanes removed from airports even if under utilized.**
- **Airport desires for expansion considered.**
- **Accommodation for unusual circumstances made.**
  - High carry-on baggage per passenger,
  - Large number of small children, and
  - Space available.
- **Proper screening paramount.**
- **Net result: Approximately 10% increase in number of lanes approved.**

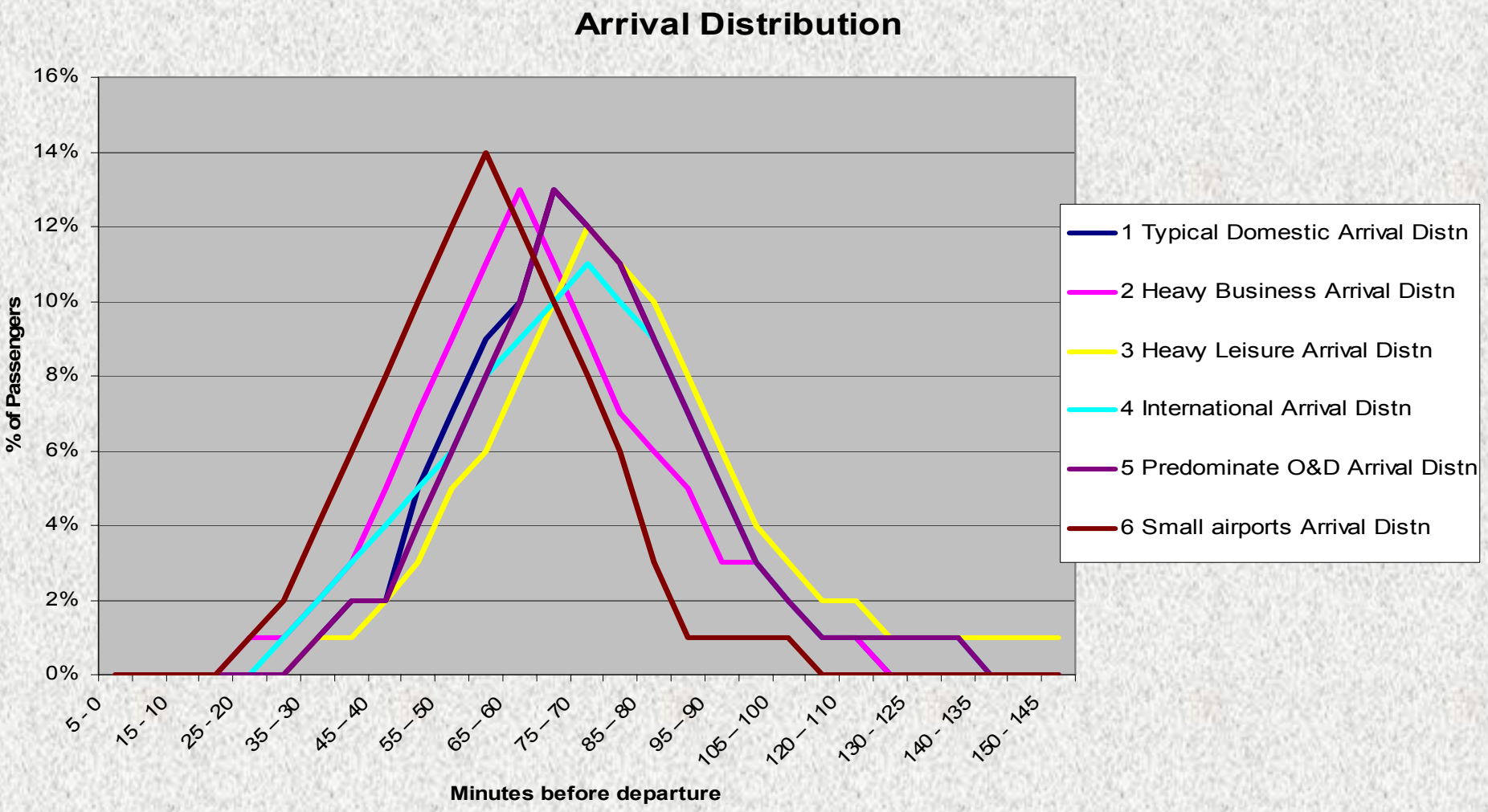
Airport Staffing Model Criteria

- **Once number of lanes established, must determine screener staffing throughout the day and week.**
- **Opening and closing of lanes necessary to account for fluctuating pax flow throughout the day.**
- **Optimize ratio of staff working to staff needed.**
- **Model must accommodate full gambit of issues.**
  - Employees need predictable shift times.
  - Airline schedules change frequently.
  - Passenger loads fluctuate:
    - Time of year, special events, discount tickets, etc.
  - Passenger arrivals to airport prior to flight vary according to the type of person.
  - Changes in equipment and processes change staffing needs.

Staffing Profile Model

- **Model developed in Excel by GRA, Inc. under contract to TSA.**
- **Model inputs:**
  - Airport configuration of lanes and checkpoints;
  - Airlines being served by each checkpoint;
  - Airline flight schedule from the Official Airline Guide (OAG);
  - Originating passenger load factors by airline plus additional crew and employees that pass through checkpoint;
  - Lane equipment staffing requirements;
  - Lane throughput in passengers per hour; and
  - Passenger arrival profiles based on airport type.

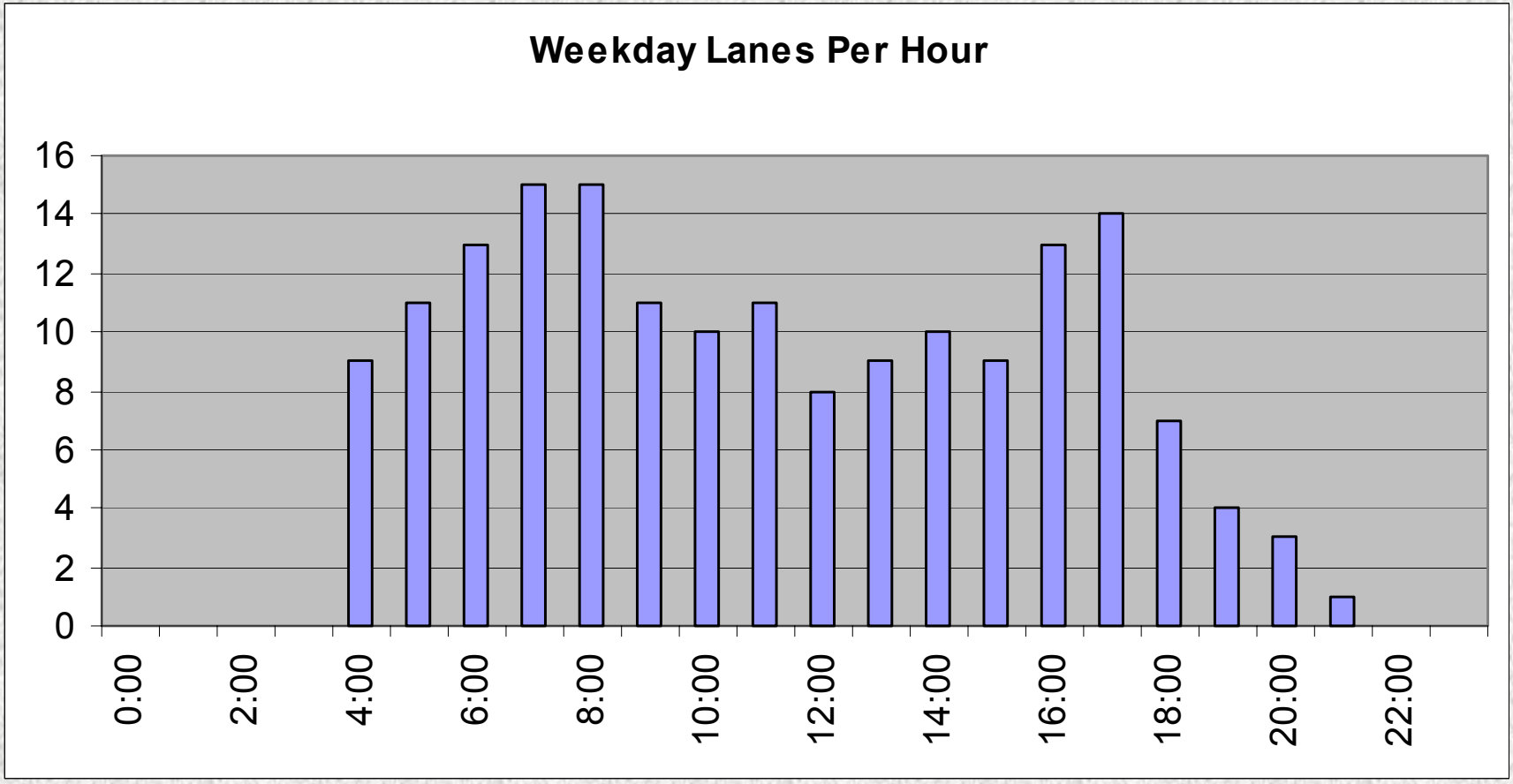
Passenger Arrival Profile



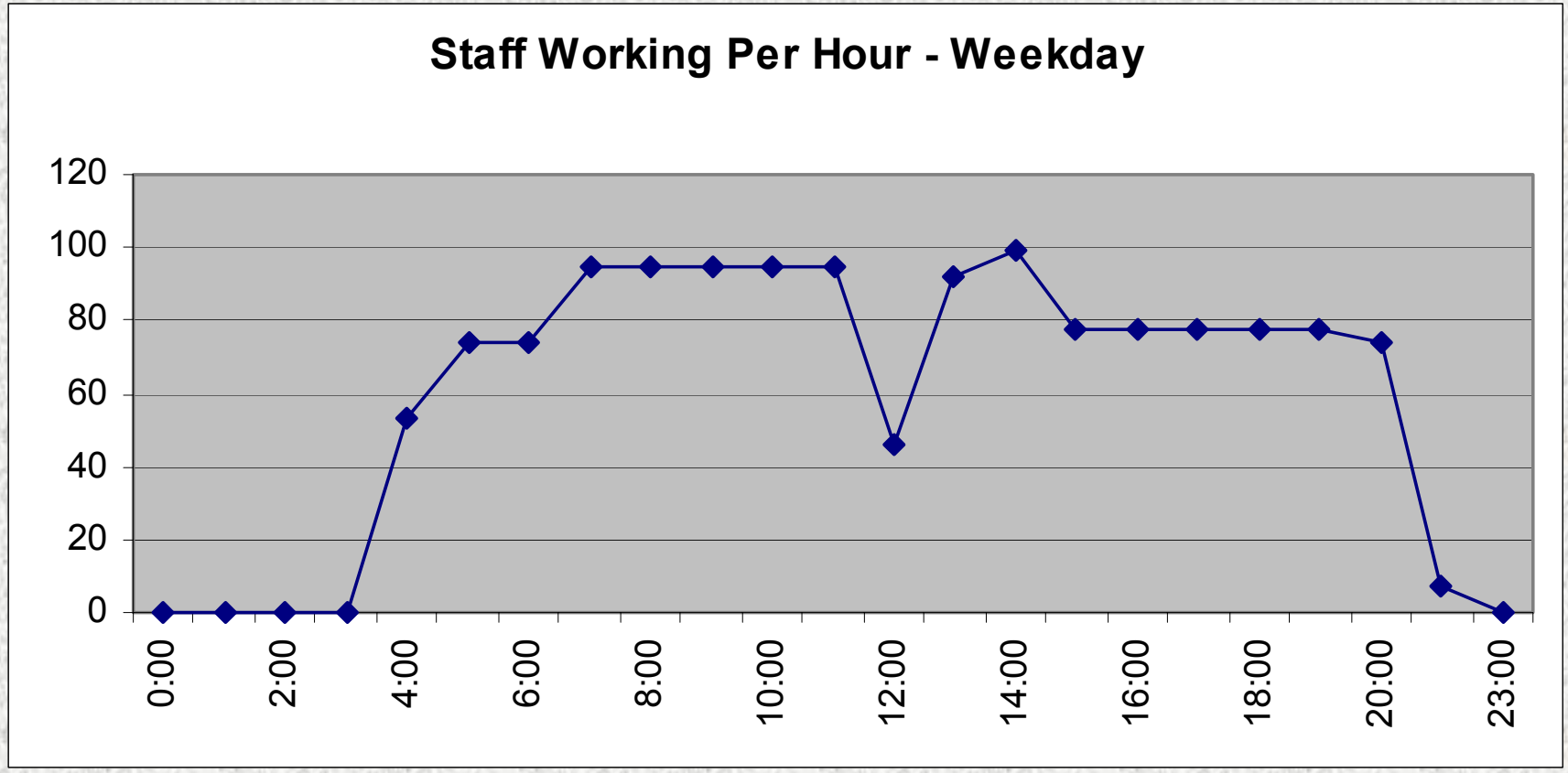
Model Output

- **Model provides output profile for number of lanes required to be staffed hourly to meet wait level standard for expected passenger load.**
- **Model also provides staffing profiles for multiple shift patterns (e.g., 10 h, 8 h, split shift).**
  - Optimizes ratio of actual staff working to staff needed. Eliminates excess capacity.
  - Must be reasonable for airports to implement mixture of different shift options and variable start times.
  - Adds additional staff to account for training, vacation, and sick leave.

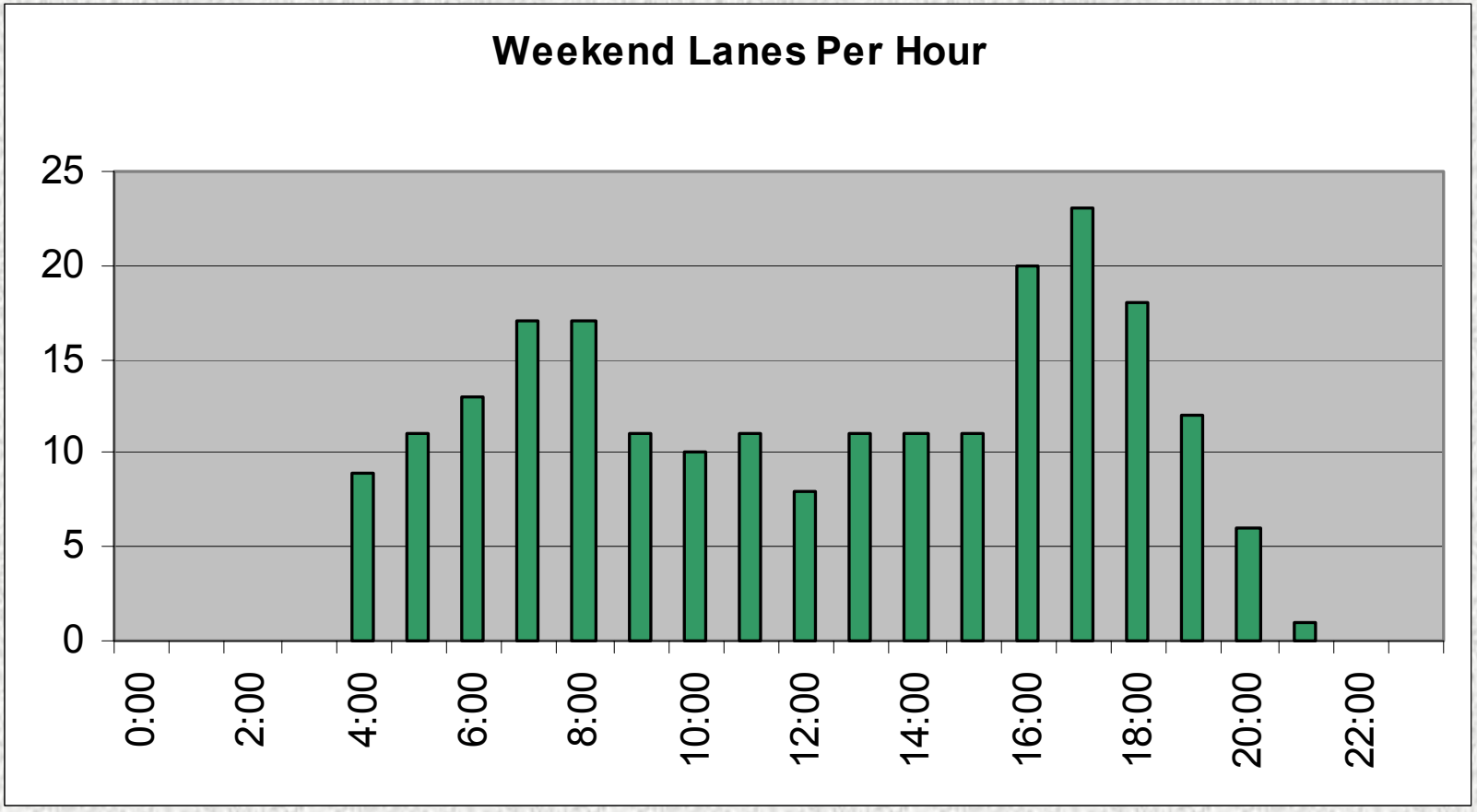
Lane Usage Profile



Optimal Staffing Profile



Typical Profile for Large Airport



Weekend Profile